



Personalized single-cell diagnostics enables non-invasive and quasi-weekly repeatable screening of early-stage cancer, for monitoring or during follow-up.«

### Division Diagnostics at Fraunhofer IMM – your partner for industrial-relevant research

We provide R&D for microfluidic-based analysis systems with applications in life sciences, medical research and diagnostics, food safety or biotechnology.

#### Our partners benefit from

- low cost consumables (disposable)
- minimized reagent consumption for monitoring purposes
- minimal hands-on time or full automation

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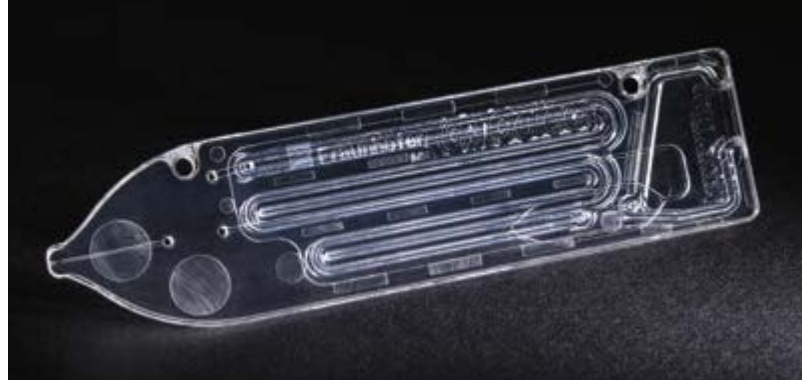


Cancer cure requires cancer detection

#### CTCelect

On-site microfluidic system as an advanced strategy for broad population-based tumor screening

# Individual diagnostics for individual diseases




## Why do we need a new solution?

According to the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO), more than 25,000 people worldwide die as a result of cancer on a single day. Despite the many efforts and innovations in imaging technologies and personalized therapy, there are no all-encompassing early detection methods that unmask cancer development before metastasis.

Further, since tumor disease is individual for each person, "one fits all" solutions have long been considered outdated. An improvement in stratification, especially with regard to the response to adjuvant, molecular and immunotherapies by testing different biomarkers is therefore of immense importance.

## How does the new solution work?

For about ten years, our mission has been to develop a microfluidic concept for the enrichment, detection and single cell dispensing of circulating tumor cells (CTCs) from a 7.5 ml blood sample.

 With our innovative microfluidic diagnostic platform for the automated screening of blood and tissue we want to improve early tumor cell detection and monitoring.«

Here, we use the microfluidic device demonstrator CTselect for automated single cell isolation of circulating tumor cells. A combination of pre-enrichment of the target cells and gentle cell separation in a microchip can enable the isolation of viable tumor cells. In doing so, we aim to generate cross-regional interest in collaboration for personalized therapy discovery in various cancers.

## What makes the solution unique?

Few systems are available on the liquid biopsy market that have been shown to appropriately isolate circulating tumor cells, while single cell isolation from tissue biopsies is usually not included at all. Our platform, on the other hand, addresses a broad range of applications beyond pure prognostics, from basic tumor research to mutation analysis and drug testing in tumor organoid cultures for personalized medicine.

Our close network with a clinical institution and an analysis service provider is intended to deliver real added value to improve patient therapy plans but also their quality of life. We aim to demonstrate a viable solution to confirm wide-ranging CTC and companion diagnostics and actively engage in discussion with guideline authorities to maximize the societal contribution.

In the age of cell and immunotherapies, the technology is expected to extend to the isolation of other rare cells in the future due to its flexibility.